

SAFETY DATA SHEET



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METHYL ETHYL KETONE

SDS No. M0149

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Methyl Ethyl Ketone

Synonyms: 2-Butanone, ethyl methyl ketone, MEK

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 2

Eye Irritation: GHS Category 2A

Specific Target Organ Toxicity, single exposure: GHS Category 3

Label Elements

Signal Word: DANGER!

Hazard Statements:

H225 – Highly flammable liquid and vapor.

H319 – Causes serious eye irritation.

H336 – May cause drowsiness and dizziness.

Precautionary Statements:

P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P243 – Take precautionary measures against static discharge.

P280 – Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

Emergency Overview

Breathing vapors may cause drowsiness and dizziness. Causes irritation to the eyes. Repeated exposure may cause dryness and cracking of skin. Aspiration hazard. Highly flammable liquid and vapor. Vapor may cause flash fire. Target Organs: Central nervous system, respiratory system, eyes, and skin..

HMIS Rating:

Health – 2* Flammability – 3 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Methyl Ethyl Ketone	78-93-3	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If breathing is labored or with coughing, give 100% supplemental oxygen. If not breathing, begin artificial respiration. Get medical aid.

Ingestion: Aspiration hazard. Get medical aid. Do not induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have person lean forward.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Soap and cold water may be used. Get medical attention if irritation develops and persists. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact: Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Highly flammable liquid and vapor (GHS Category 2)

Auto-ignition Temperature: 404° C (759° F)

Flash Point: -9° C (19° F)

Flammable Limits: Lower Limit – 1.4 vol % at 93° C, Upper Limit – 11.4 vol % at 93° C

Products of Combustion: Will decompose into highly toxic and irritating gases (carbon monoxide, carbon dioxide, peroxides) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. May accumulate static electric charge and may cause ignition of its own vapors. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Material floats on water and may travel to a source of ignition and spread fire.

Specific Explosion Hazards: None

Fire Fighting Media: Use dry chemical, carbon dioxide, or appropriate foam. Solid streams of water may be ineffective and spread material.

National Fire Protective Association: Health - 1, Flammability - 3, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Use only non-sparking

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tools and equipment. A vapor suppressing foam may be used. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or appropriate eye protection. Use appropriate protective gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – 200 ppm TWA; 300 ppm STEL

NIOSH – 200 ppm TWA; 590 mg/m³ TWA; 3000 ppm IDLH

OSHA Final PELs – 200 ppm TWA; 590 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Sweetish acetone-like odor

Odor Threshold: 5 ppm

Molecular Formula: C₂H₅COCH₃

Molecular Weight: 72.11

Auto-ignition Temperature: 404° C (759° F)

Flash Point: -9° C (19° F)

Flammable Limits: Lower Limit – 1.4 vol % at 93° C, Upper Limit – 11.4 vol % at 93° C

pH: Not available.

Boiling Point: 80° C @ 760 mm Hg

Freezing/Melting Point: -87° C

Decomposition Temperature: Not available

Specific Gravity: 0.805 g/cm³ @ 20° C

Vapor Density (Air=1): 2.41

Vapor Pressure: 77.5 mm Hg @ 20° C.

Viscosity: 0.41 cP 20° C

Solubility: Soluble

Conductivity at 25°C: Conductive; Conductivity = 1x10⁷ pS/m; Dielectric Constant = 18.51; Relaxation Time Constant = 1.8x10⁻⁵ seconds

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Ignition sources, excess heat, and confined spaces.

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Incompatibility With Various Substances: Strong oxidizing agents, strong reducing agents.

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Inhalation of vapors irritates the respiratory tract and may cause drowsiness and dizziness. Overexposure may cause central nervous system depression with nausea and headache. Neurobehavioral effects of exposure to MEK (200 ppm for 4 hours) were studied with 137 volunteers. There were no statistically significant effects observed in biochemical, psychomotor, sensorimotor, and psychological tests.

INGESTION HAZARD: May produce gastrointestinal irritation. May cause central nervous system depression. Possible aspiration hazard. Animal evidence suggests this material can be aspirated into the lungs during ingestion or vomiting.

SKIN CONTACT HAZARD: May be absorbed through the skin in harmful amounts. Defatting or dermatitis may result from prolonged or repeated exposure. Only one human case of skin sensitization was reported. No results were observed in animal testing. Material did not produce sensitization in the mouse ear thickness test.

EYE CONTACT HAZARD: Vapors cause eye irritation. Animal evidence suggests this material can cause moderate to severe eye irritation.

Chronic Exposure Hazards: Chronic inhalation may cause effects similar to those of acute inhalation. Repeated or prolonged skin contact may defat the skin and produce irritation and dermatitis. Animal studies have reported that fetal effects/abnormalities may occur when maternal toxicity is seen. Chronic overexposure to vapors may cause lung damage.

Animal Toxicity:

Draize test, rabbit, eye: 80 mg;

Draize test, rabbit, skin: 500 mg/24H Moderate;

Draize test, rabbit, skin: 402 mg/24H Mild;

Inhalation, mouse: LC50 = 32 g/m³/4H;

Inhalation, rat: LC50 = 23,500 mg/m³/4H;

Oral, mouse: LD50 = 3000 mg/kg;

Oral, rat: LD50 = 2737 mg/kg;

Skin, rabbit: LD50 = 6480 mg/kg;

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

Teratogenicity: Embryo or fetus: fetotoxicity, inhalation-rat, TCl_o = 1000 ppm; Specific developmental abnormalities: craniofacial and urogenital, inhalation-rat, TCl_o = 3000 ppm/7H; musculoskeletal, inhalation-rat, TCl_o = 1000 ppm.

Reproductive Effects: No information available.

Mutagenicity: Sex chromosome loss/non-disjunction: *S. cerevisiae* 33,800 ppm.

Neurotoxicity: Exposure of rats 8 hours/day 7 days/week at 6000 ppm did not result in any obvious motor impairment; however, all rats died from bronchopneumonia in the 7th week. Exposure of cats did not induce neuropathy. Experimental animal studies have shown that mixing MEK with methyl n-butyl ketone, n-hexane, and 2, 5-hexanedione enhanced the development of neuropathies or increases their severity. When synergism or potentiation may occur, stringent control of the primary toxin is encouraged.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Fathead minnow: LC50 = 3220 mg/L; 96H, unspecified;

Fish: Bluegill/sunfish: LC50 = 1690 mg/L; 96H, unspecified;

Bacteria: *Phytobacterium phosphoreum*: EC50 = 51.9 mg/L; 25M, Microtox test;

Bacteria: *Phytobacterium phosphoreum*: EC50 = 3373 mg/L; 30M, Microtox test;

Environmental Fate: Substance evaporates in water with T_{1/2} = 3D (rivers) to 12D (lakes). Substance is not expected to bioconcentrate in aquatic organisms. Substance photodegrades in air with T_{1/2} = 2.3 days. Oxidizes rapidly by

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photochemical reactions in air. Readily biodegradable meeting the 10 day window criterion. Not expected to significantly bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is a "U" listed waste (U159 – ignitable, toxic).

14. TRANSPORT INFORMATION

US DOT

Proper Shipping Name: Ethyl Methyl Ketone

Hazard Class: 3

UN Number: UN1193

Packing Group: II

IMDG

Proper Shipping Name: Ethyl Methyl Ketone

Hazard Class: 3

UN Number: UN1193

Packing Group: II

IATA

Proper Shipping Name: Ethyl Methyl Ketone

Hazard Class: 3

UN Number: UN1193

Packing Group: II

15. REGULATORY INFORMATION

US Federal Regulations:

CERCLA Hazardous Substances: CAS# 78-93-3 – 5000 lb (2270 kg) final RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 78-93-3 – immediate, delayed, fire

Section 313: MEK (CAS# 78-93-3) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 78-93-3 is on the following state right-to-know lists: New Jersey, Pennsylvania, and Massachusetts

California Prop 65: This product does not contain any chemical known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Originally Prepared: 10/24/2006

Last Revised: 11/12/2014 – Updated hazard categories, hazard statements, and precautionary statements in Section 2 and incompatibility with various substances in Section 10.

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information

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gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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